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# Computational Science

In the College of Sciences

**OFFICE: Geology/Mathematics/Computer Science 206H**

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**<http://www.sci.sdsu.edu/compsi>**

## Faculty

*Program Director:* José E. Castillo (Mathematics and Statistics)

*Associated Faculty:* Bailey (Mathematics and Statistics), Baljon (Physics), Bhattacharjee (Mechanical Engineering), Blomgren (Mathematics and Statistics), Bromley (Physics), Carretero (Mathematics and Statistics), Cooksy (Chemistry and Biochemistry), Day (Geological Sciences), Duncan (Mathematics and Statistics), Edwards (Computer Science), Fan (Mathematics and Statistics), Frey (Biology), Johnson (Physics), Kassegne (Mechanical Engineering), Kelley (Biology), Kumar (Electrical and Computer Engineering), Levine (Mathematics and Statistics), Love (Chemistry and Biochemistry), Mahaffy (Mathematics and Statistics), Mellors (Geological Sciences), Olevsky (Mechanical Engineering), Olsen (Geological Sciences), O'Sullivan (Mathematics and Statistics), Palacios (Mathematics and Statistics), Paolini (Biology, Emeritus), Papin (Physics and Associate Dean, College of Sciences), Pullman (Chemistry and Biochemistry), Roch (Computer Science), Rohwer (Biology), Salamon (Mathematics and Statistics), Sandquist (Astronomy), Segall (Biology), Shen (Mathematics and Statistics), Valafar (Computer Science), Venkataraman (Aerospace Engineering and Engineering Mechanics), Weber (Physics), Zeller (Biology).

## Offered by Computational Science

Doctor of Philosophy degree in computational science.

Master of Science degree in computational science.

Concentration in professional applications.

Certificate in professional computational science, advanced (refer to the *Graduate Bulletin*).

## Courses (COMP)

*Refer to Curricula and Courses and University Policies sections of this catalog for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.*

### UPPER DIVISION COURSES

**(Also Acceptable for Advanced Degrees)**

#### COMP 526. Computational Methods for Scientists (3)

Prerequisites: Mathematics 252 and 254.

Translating mathematical problem descriptions to computer programs. Introduction to Unix system.

#### COMP 589. Computational Imaging (3)

Prerequisites: Mathematics 150 and 254.

Mathematical techniques used for image processing and analysis. Emphasis on variational techniques which lead to PDE based image processing algorithms, most are known as diffusion filters, and interface propagation techniques for which emphasis will be implicit representation (level-set methods). Representation and properties of curves and surfaces, statistical (PCA/ICA), and multi-resolution image analysis techniques.

#### COMP 596. Advanced Topics in Computational Science (1-4)

Prerequisite: Consent of instructor.

Selected topics in computational science. may be repeated with the approval of the instructor. See *Class Schedule* for specific content. Limit of nine units of any combination of 296, 496, 596 courses applicable to a bachelor's degree. Maximum credit of six units of 596 applicable to a bachelor's degree. Credit for 596 and 696 applicable to a master's degree with approval of the graduate adviser.

### GRADUATE COURSES

**Refer to the *Graduate Bulletin*.**

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